REPOSITORY CRITERIA

Section C Attachment C-A-F
Repository Criteria

These supplemental requirements are those that the Contractor must meet to assure that the loaded canisters will meet waste acceptance requirements at the planned geologic repository. These requirements are based on Waste Acceptance System Requirements Document December 2,1998, Revision 03A. The references provided in square brackets [-] contain current guidance (See DOE/SNF/REP-009 Revision 1, Draft, September 1998) for complying with the stated requirement. This table of requirements is provided as a contract baseline for supplemental repository requirements. Note that the current version of this repository guidance references an earlier version of the repository acceptance requirements.

Requirements	References
1. All SNF shall comply with the applicable provisions of the Nuclear Waste Policy Act, appropriate EPA, DOT, and NRC regulations for transportation, storage (if approved) and geologic disposal. The latter include but are not limited to 10 CFR Part 60, 10 CFR Part 71, 10 CFR Part 72 and 10 CFR Part 73.	4.2.2.A [4.1.2]
2. The SNF shall be in solid form and placed in sealed canisters.	4.2.2.B.1 [4.1.2]
3. The SNF shall be consolidated, if in particulate form, (for example, by incorporation into an encapsulating matrix) to limit the availability and generation of particulates.	4.2.2.B.2 [4.1.2.1]
4. See Section C-A General Specification Section 4.3.4.4 Repository Fissile Loading Limits.	4.2.2.C.1-3 [4.1.2.3]
5. The SNF shall not contain or generate materials that are explosive, pyrophoric, or chemically reactive (in the repository environment) in a form or amount that could compromise the repository's ability to perform its waste isolation function or satisfy its performance objectives.	4.2.2.D.1 [4.1.2.2]
6. The SNF shall not contain or generate free liquids in the waste package to an amount that could compromise the ability of the waste package to achieve the performance objectives related to containment of the waste form or result in spillage and spread of contamination in the event of waste package perforation during the period from placement in a waste package through permanent closure of the repository.	4.2.2.D.2 [4.1.2.4]
7. See Section C-A General Specification Section 4.3.4.6 Labeling.	4.2.2.E.1-3 [4.2.1.4]
8. See Section C-A General Specification Section 4.3.4.2 Sealing and Inerting.	4.2.3.A.1-2 [4.2.1.3, 4.2.2.3]

9. The waste form shall not contain detectable amounts of organic materials.	4.2.3.A.3 [4.1.2.8]
10. The Civilian Radioactive Waste Management System shall only accept SNF that is not subject to regulation as hazardous waste under the RCRA Subtitle C for disposal in the first geologic repository licensed by NRC under the Nuclear Waste Policy Act. Prior to acceptance for disposal, Producers/Custodians must determine and document that RCRA-regulated wastes are not present, and develop appropriate data to assure relevant state and/or EPA requirements are addressed.	4.2.3.B [4.1.2.6]
11. See Section C-A General Specification Section 4.3.4.5. The levels of non-fixed (removable) radioactive contamination on external surfaces of each canister should be as low as is reasonably achievable (ALARA). The level of non-fixed radioactive contamination may be determined by wiping an area of 300 cm^2 of the concerned surface with an absorbent material, using moderate pressure, and measuring the activity on the wiping material. Sufficient measurements must be taken in the most appropriate location to yield a representative assessment of the non-fixed contamination levels. Other methods of assessment of equal or greater efficiency may be used. At the time of acceptance, the non-fixed radioactive contamination on the wiping material shall not exceed 2,200 dpm/100 cm^2 of canister surface wiped for alpha emitting radionuclides and 22,000 dpm/100 cm^2 of canister surface wiped for beta and gamma emitting radionuclides.	4.2.3.D [4.2.2.1]
12. The loaded SNF containers shall be compatible with the physical protection criteria applied to a NRC licensed facility under 10 CFR 73.51.	4.2.2.A [n/a]
13. The total and fissile uranium and plutonium content of each canister in grams shall be reported. The concentration of plutonium in grams per cubic meter for each canister shall be reported. Concentrations in excess of 2500 grams/cubic meter may be subject to additional safeguards requirements. The ratio by weight of the total element of the following isotopes: U-233, U-234, U-235, U-236, U-238, Pu-238, Pu-239, Pu-240, Pu-241, and Pu-242 shall be reported. The data shall be generated, documented, maintained and reported in accordance with NRC quality assurance requirements.	4.2.3.F.1-2 [4.1.2.3, 4.2.2.3]
14. Ancillary equipment and hardware and special tools and fixtures necessary to handle and transfer loaded canisters and storage modules shall be proven concepts utilized at a facility regulated by NRC under 10 CFR Part 50 or 10 CFR Part 72.	4.2.3.2.A.3 [4.2.1.2]
15. The maximum weight of a loaded DOE SNF canister, fully loaded in its transportation overpack, shall not exceed 130 tons.	4.2.3.2.C.3 [4.2.1.1]
16. The canistered DOE SNF shall not exceed a maximum gamma-	4.2.3.2.D

ray dose rate of 10^5 rem per hour and a maximum neutron dose rate of 10 rem per hour at a distance of 1 meter from any accessible surface without intervening shielding at the time of acceptance. **(TBV)**	[4.2.2.1]
17. After packaging for disposal, the thermal output of the canistered DOE SNF shall be such that the total disposal package does not exceed a thermal output of 14.2 kilowatts **(TBV)** at the time of acceptance. The actual canister decay heat shall be reported.	4.2.3.2.E [4.2.2.2]
18. See Section C-A General Specification Section 4.3.3. This requirement applies to the conceptual design for the transportation system. — Handling equipment design shall be provided suitable for use in loading or unloading the canistered DOE SNF (as handled at the repository) from a transportation cask or waste package.	4.2.3.2.G.1 4.2.3.2.G.3 [4.2.1.2]
19. The handling equipment shall comply with applicable regulatory guidelines and national standards, such as Nuclear Regulatory Commission NUREG 0612 and American National Standards Institute (ANSI) N14.6 for lifting/handling devices.	4.2.3.2.G.2 [4.2.1.2]
20. Canistered DOE SNF (Dual-Purpose Canisters or Multi-Purpose Canisters) shall be designed to permit use of a tamper-safe seal as provided in 10 CFR Part 70.51(e)(1)(I) for safeguards purposes. It must be designed such that the integrity of the weld or tamper-indicating devices may be inspected periodically.	4.2.3.2.H [4.2.1.4]